

REMARKS

Claims 1-12 are pending herein.

I. Discussion with Examiner.

Applicants respectfully thank the Examiner for discussing this case via telephone and email. Applicants have respectfully taken into account the Examiner's comments and suggestions.

II. The obviousness rejections of claims 1, 3, and 6-7 based on Matsumoto (JP 2001-189191) in view of Takaoka (JP 01-234339), Hsiao (US 2004/0241920), Dunham (US 2003/0141804) and Jaeger (US 5,867,149), as noted on page 2 of the Office Action.

The USPTO respectfully rejects claims 1, 3, and 6-7 under 35 U.S.C. § 103(a) as being unpatentable over Matsumoto in view of Takaoka, Hsiao, Dunham, and Jaeger. Claim 1 is an independent claim.

A. The cited references do not teach or suggest conducting a thermal processing before forming a low heat resistant layer, as claimed in claim 1.

Claim 1 claims in relevant part:

“**conducting a thermal processing** by volatilizing the solvent contained in the glass paste layer to provide a low melting point glass frame,

forming a low heat resistant layer on the surface of the sealing substrate in which the low melting point glass frame is provided, the low heat resistant layer made of a material having a heat resistant temperature lower than the temperature of the thermal processing.” (emphasis added)

No new matter is added by the amendments. Support for the amendments is found in present Figures 2(a)-2(c) and on pages 10-11 of the present specification. Regarding these limitations, it is respectfully not seen where the cited references teach or suggest the claimed method quoted above.

For example, the USPTO respectfully notes on page 3 of the Office Action that “Matsumoto fails to disclose . . . forming a low heat resistant layer on the surface of the sealing substrate.” Therefore, it respectfully follows that **Matsumoto cannot teach the specifically claimed order of “conducting a thermal processing” and then “forming a low heat resistant layer.”**

Additionally, the remaining references Takaoka, Dunham and Jaeger also do not overcome the deficiencies in the primary reference Matsumoto, as these references do not teach or suggest anything about the order of “conducting a thermal processing” and then “forming a low heat resistant layer,” as claimed in claim 1.

In contrast, present Figures 2(a)-2(c) illustrate at least one possible embodiment of the claimed structure quoted above. As noted on page 10 of the present specification, in present Figure 2(a) **sealing substrate 10 is heated to volatilize the solvent contained in the glass paste layer 20, i.e., a thermal process is conducted.** Present Figure 2(c) shows that **color filter 24 (i.e., a low heat resistant layer) is formed on the surface of substrate 10.**

Accordingly, present Figures 2(a)-2(c) illustrate conducting a thermal processing before forming a low heat resistant layer, as claimed in claim 1.

The distinction noted above is important and non-trivial because it results in significant advantages over conventional methods. For example, as noted in paragraph [0043] of the present specification, by conducting thermal processing before forming a low heat resistant layer, **sealing can be achieved without exposing the low heat resistant layer to a high temperature atmosphere and also without impairing the characteristics of the low heat resistant layer.**

Thus, it is respectfully asserted that the cited references, taken either alone or in combination, do not teach or suggest all of the limitations of independent claim 1. Therefore, it is respectfully asserted that independent claim 1 is allowable.

B. The dependent claims.

As noted above, it is respectfully asserted that independent claim 1 is allowable, and therefore it is further respectfully asserted that dependent claims 3 and 6-7 are also allowable.

III. The obviousness rejections of claims 8 and 10-11 based on Matsumoto in view of Beteille (US 7,033,655), as noted on page 6 of the Office Action.

The USPTO respectfully rejects claims 8 and 10-11 under 35 U.S.C. § 103(a) as being unpatentable over Matsumoto in view of Beteille. Claim 8 is an independent claim.

A. The cited references do not teach or suggest that the element substrate and the sealing substrate are sealed together with a low melting point glass, and that a portion of the low melting point glass is introduced into a frame shaped groove formed in the sealing substrate, as claimed in claim 8.

Claim 8 claims in relevant part:

“the element substrate and the sealing substrate **are sealed** and welded together along the peripheries thereof **with a low melting point glass**, and

a portion of the low melting point glass is introduced into a frame shaped groove formed in the sealing substrate.” (**emphasis added**)

Regarding these limitations, it is respectfully not seen where the cited references teach or suggest the claimed structure quoted above.

For example, the USPTO respectfully argues on page 6 of the Office Action that Matsumoto teaches that an element substrate 1 and a sealing substrate 17 are sealed together along the peripheries. However, it is respectfully important to note **that Matsumoto does not teach or suggest that element substrate 1 and sealing substrate 17 are sealed together with a low melting point glass**, as claimed in claim 8. Additionally, the USPTO respectfully notes on page 6 of the Office Action that “Matsumoto fails to disclose that a portion of the low melting point glass is introduced into the frame shaped groove formed in the sealing substrate.”

The USPTO respectfully attempts to overcome this deficiency in Matsumoto by arguing that that Beteille shows a seal 5 that can include a frame of low melting point glass.

However, Applicants respectfully note that **Beteille does not disclose a technology of welding and sealing with glass, but merely a technology of introducing a glass ball into a sealing material.** In other words, Beteille is using a sealing material (and not a glass) to seal the substrates, and the glass balls are only used to maintain proper spacing. For example, see column 9, line 43 of Beteille, which notes that the spacing between two balls can be about 2 cm. Thus, it is respectfully asserted that Beteille does not teach or suggest that the element substrate and the sealing substrate are sealed together with a low melting point glass, and that a portion of the low melting point glass is introduced into a frame shaped groove formed in the sealing substrate, as claimed in claim 8

In contrast, present Figure 1(f) illustrates at least one possible embodiment of this claimed structure. For example, as explained on pages 9-10 of the present specification, **glass paste 20 is inserted into grooves in sealing substrate 10.** As also explained on page 9 of the present specification, glass paste 20 contains low melting point glass powder. This **glass paste is used to seal element substrate 26 to sealing substrate 10 (see present Figure 2(e)).** Thus, the element substrate and the sealing substrate are sealed together with a low melting point glass, and a portion of the low melting point glass is introduced into a frame shaped groove formed in the sealing substrate, as claimed in claim 8.

The distinction noted above is important and non-trivial because it results in significant advantages over conventional devices. For example, as noted on page 2 of the present specification, **sealing the substrates with glass can result in a more airtight seal than conventional seals.**

Thus, it is respectfully asserted that the cited references, taken either alone or in combination, do not teach or suggest all the limitations of independent claim 8. Therefore, it is respectfully asserted that independent claim 8 is allowable over the cited references.

B. The dependent claims.

As noted above, it is respectfully asserted that independent claim 8 is allowable, and therefore it is further respectfully asserted that dependent claims 10-11 are also allowable.

IV. The obviousness rejection of claim 2 based on Matsumoto in view of Takaoka, Jaeger, Hsiao, Dunham, Shimizu (US 2002/0030437) and Sagara (US 5,997,377), as noted on page 7 of the Office Action.

As noted above, it is respectfully asserted that independent claim 1 is allowable, it is further respectfully asserted that Shimizu and Sagara do not overcome the deficiencies in the cited references as noted above in Section II regarding independent claim 1. Therefore, it is further respectfully asserted that dependent claim 2 is also allowable.

V. The obviousness rejection of claim 4 based on Matsumoto in view of Takaoka, Jaeger, Hsiao, Dunham, and Sagara, as noted on page 8 of the Office Action.

As noted above, it is respectfully asserted that independent claim 1 is allowable, it is further respectfully asserted that Sagara do not overcome the deficiencies in the cited references as noted above in Section II regarding independent claim 1. Therefore, it is further respectfully asserted that dependent claim 4 is also allowable.

VI. The obviousness rejection of claim 5 based on Matsumoto in view of Takaoka, Jaeger, Hsiao, Dunham, and Kawashima (US 2005/0029513), as noted on page 9 of the Office Action.

As noted above, it is respectfully asserted that independent claim 1 is allowable, it is further respectfully asserted that Kawashima do not overcome the deficiencies in the cited references as noted above in Section II regarding independent claim 1. Therefore, it is further respectfully asserted that dependent claim 5 is also allowable.

VII. The obviousness rejection of claim 9 based on Matsumoto in view of Beteille and Hsiao, as noted on page 10 of the Office Action.

As noted above, it is respectfully asserted that independent claim 8 is allowable, it is further respectfully asserted that Hsiao do not overcome the deficiencies in the cited references as noted above in Section III regarding independent claim 8. Therefore, it is further respectfully asserted that dependent claim 9 is also allowable.

VIII. The obviousness rejection of claim 12 based on Matsumoto in view of Beteille and Sun (US 2004/0160184), as noted on page 11 of the Office Action.

As noted above, it is respectfully asserted that independent claim 8 is allowable, it is further respectfully asserted that Sun do not overcome the deficiencies in the cited references as noted above in Section III regarding independent claim 8. Therefore, it is further respectfully asserted that dependent claim 12 is also allowable.

IX. Conclusion.

Reconsideration and allowance of all of the claims is respectfully requested.

If there are any additional charges with respect to this Amendment or otherwise, please charge them to Deposit Account No. 06-1130.

Please contact the undersigned for any reason. Applicants seek to cooperate with the Examiner including via telephone if convenient for the Examiner.

Respectfully submitted,

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